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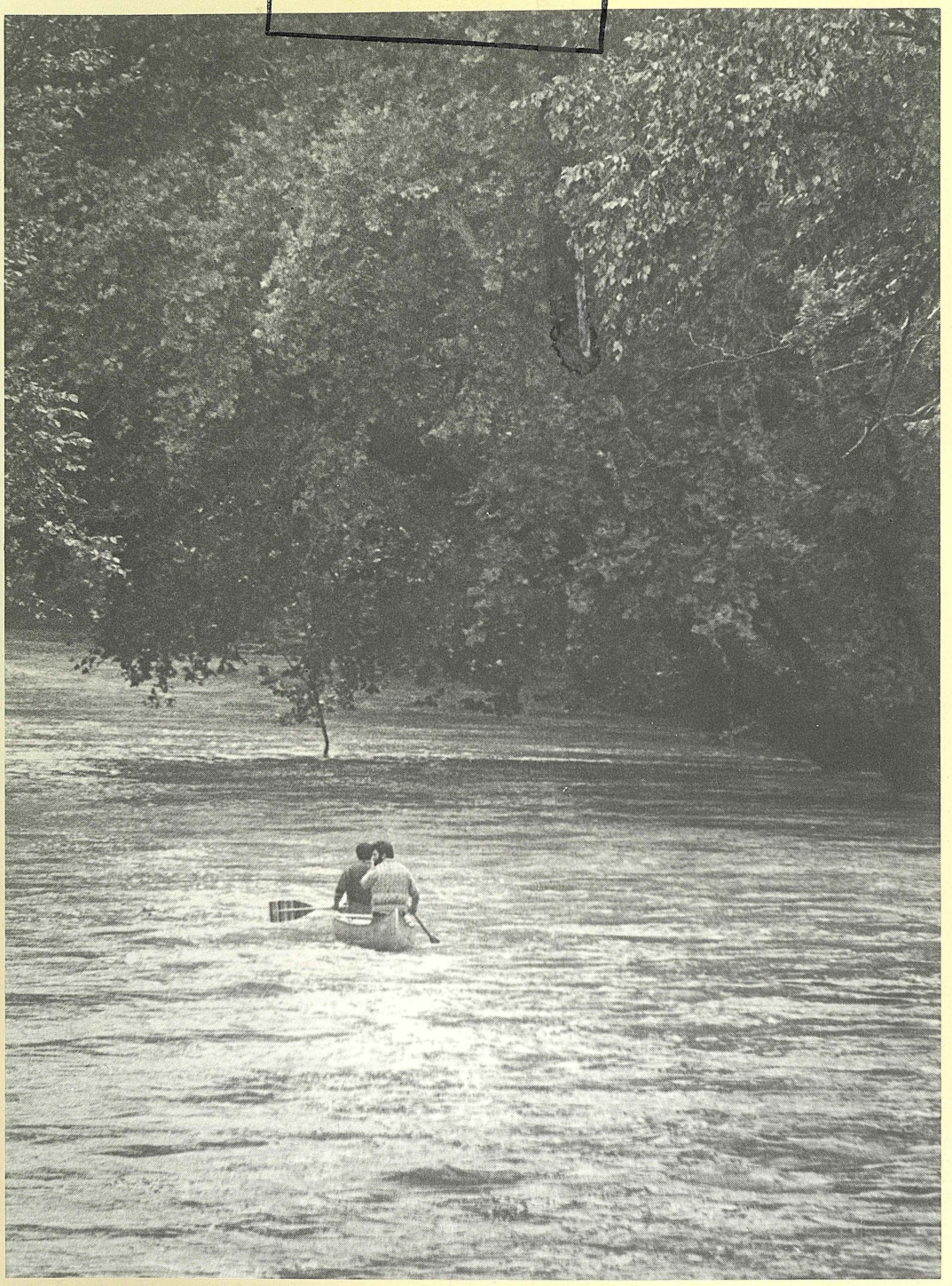
UPDATE: THE STATE OF MISSOURI'S WATER

SEP 12 '83

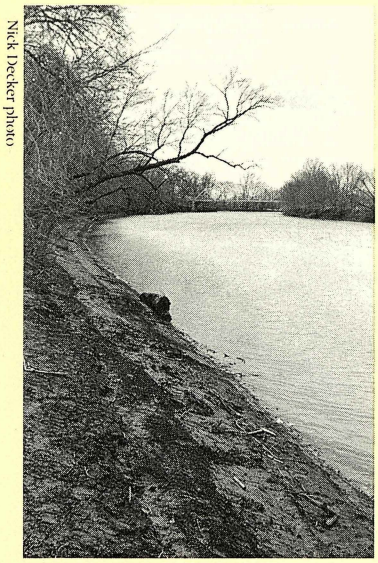


Missouri Department of Natural Resources
Division of Environmental Quality

In most parts of Missouri, there is an abundance of refreshing water for drinking, swimming, irrigating and other uses. Public concern over the quality of this water often has led to the question: "What is the overall condition of waters of the state?"

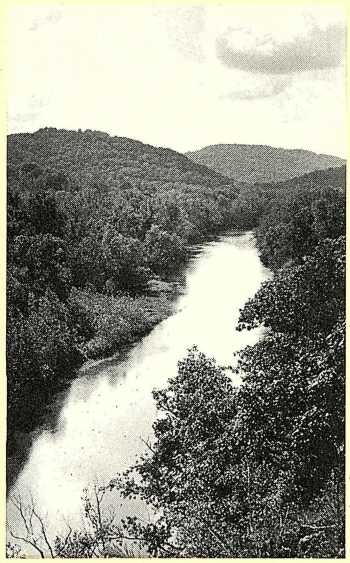
Jeff Gerling photo

The answer: A decade of improved wastewater treatment in the state has led to significantly improved water quality over much of the state while, at the same time, water quality has remained good in the rest of the state in spite of increased population and industrial growth.



Nick Decker photo

Missouri's northern and western streams, which flow through the plains, typically have high mud banks.



Sue Holst photo

Clear water flowing through scenic valleys characterizes Ozark streams such as the Current River.

To a large extent, the water quality of Missouri's rivers and streams is determined by drainage basins.

Northern and western streams, for example, flow through Missouri's plains. These streams generally are characterized by mud banks, sand or mud bottoms, and turbidity or muddiness after rain. They generally have levels of dissolved minerals and sediment higher than levels found in Ozark streams.

The Ozark streams, which flow through deep, narrow valleys with sharp ridges, have gravel or rock bottoms, and clear water due to the continuous flow from underground sources. They generally contain relatively small amounts of dissolved minerals and sediment, but relatively high dissolved gas (such as carbon dioxide and oxygen).

Drainage basins are not the only factors that determine a stream's characteristics. Site-specific situations also influence a stream's water quality. Streams that flow through mining areas, for example, will contain dissolved metals; streams that flow through areas highly cultivated with row crops, such as corn, will contain agricultural chemicals; and streams that are fed by large springs will have lower temperatures.

ABOUT THE COVER:

During periods of high flow, Cedar Creek, which forms the boundary for Boone and Callaway counties, provides recreational opportunities for canoeists. The creek is the focus of a land reclamation project near Columbia designed to improve water quality.

Nick Decker photo

Through its definition of pollution, the Missouri Clean Water law determines whether these site-specific situations are causing pollution. According to this law, pollution is defined as ". . . contamination, . . . which will create a nuisance or render such waters harmful, detrimental or injurious to public health, . . . or other legitimate beneficial uses, or to wild animals, birds, fish or other aquatic life." Water quality violations are said to exist when pollutants make streams incapable of fully supporting their uses for drinking, swimming, or the other beneficial uses identified for each stream in the state's water quality standards.

The Department of Natural Resources' water pollution control program deals with these violations in several ways.

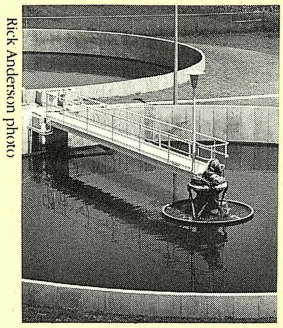
To improve the quality of Missouri's streams, all dischargers of wastewater must obtain permits that limit the kinds and amounts of contaminants in each discharge of wastewater. According to recent figures, 760 municipal, 62 major industrial, and more than 2,000 miscellaneous other sources of wastewater are sending their discharge into the state's streams and rivers. Approximately half of these permit holders now meet their permit limits—an improvement of 13 percent since 1978. Since many of these permit violations relate to reporting and procedural improprieties, the total percent of non-compliant permits that cause water quality problems is only 25 percent statewide.

Many of the permitted facilities unable to meet their limits are municipalities with treatment plants that suffer from operational problems. Since 1972, the department has allocated more than $800 million in state and federal grants to improve wastewater treatment in Missouri. While it is difficult to measure them, water quality improvements have been evidenced from decreased incidence of complaints and the reappearance of certain fish in some Missouri streams.

One important facet of the water pollution control program is the increased effort to control industrial, as well as municipal, discharges. The industrial pretreatment program, implemented at local levels, requires the removal of strong industrial wastes before they are discharged into municipal sewer and treatment systems. Over the next three years, 55-60 Missouri cities will be developing local pretreatment programs; several industries already have implemented pretreatment programs that should improve existing municipal discharges in 1983.

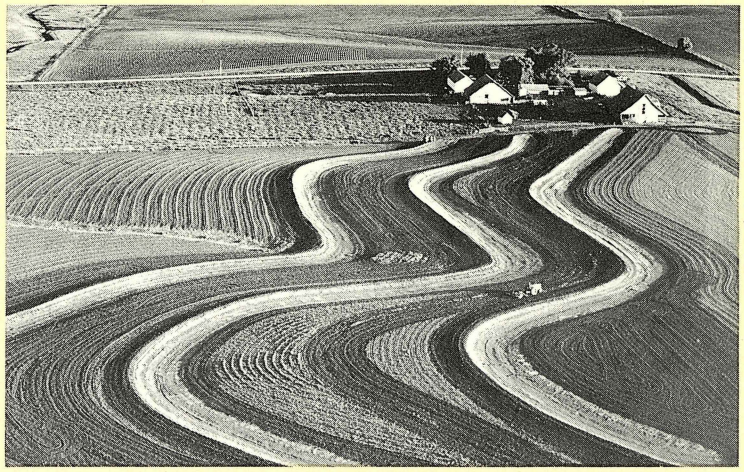
While treatment of municipal and industrial wastewaters will continue to improve water quality, turbidity and sedimentation in streams from non-point, or "runoff," pollution are important water quality problems facing Missourians today.

Many of Missouri's streams do not meet turbidity standards for clean water. To combat pollution from non-point sources, the state is attempting to reduce soil erosion and sedimentation by encouraging the use of management practices that are most effective in controlling runoff and in controlling stream bank erosion from unwise river channel modification. In the years ahead, improved soil erosion practices, stringent requirements for reclamation of mined lands, and better metal extraction



Rick Anderson photo

Treatment facilities are designed to discharge wastewater that meets Missouri's water quality needs.



U.S. Soil Conservation Service photo

Farmers can alleviate runoff pollution by using terraces, contoured fields, and grassed waterways.

Nick Decker photo

Basic data on water quality helps direct policy decisions on water pollution control.

Recent Water Quality Standards Violations

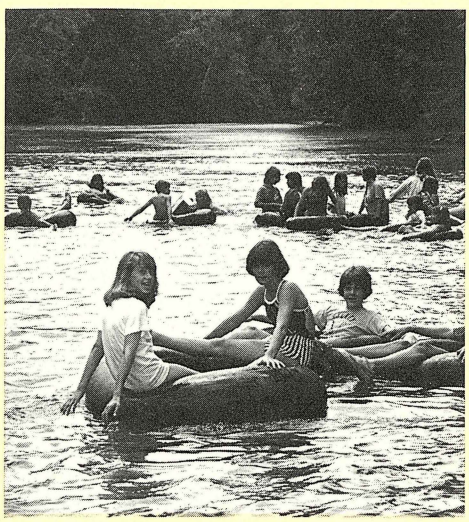
Use criteria	Number of stream miles meeting use	Total stream miles designated for use	Percent of state meeting use	Nature of violations where uses aren't being attained
Swimming	4,235	4,506	96.0%	Occasional fecal coliform bacteria concentrations exceeding criteria of 200 colonies/100 milliliters. Generally from runoff.
Aquatic Life	17,669	18,000	98.2%	Modifications of the aquatic community (fish, insects, or other invertebrates) that range from fish kills and absence of aquatic life to replacement of pollution-intolerant invertebrates by those that are more tolerant of pollution.
Drinking Water Supply	3,038	3,207	94.7%	Presence of substances exceeding recommended levels for drinking water supplies. Generally relating to taste and odor concerns; however, human health also may be a concern.
Coldwater Fishery	174	180	96.7%	Occasional exceedances of the six parts per million dissolved oxygen standard at Lake Taneycomo and occasional temperature violations for Little Piney River.

Information as of December 1982

procedures will reduce pollution problems caused by agricultural and mining runoff.

Significant water quality improvements in 1982 resulted from modifications of two major animal waste facilities that had been causing chronic fish kills. Another animal waste facility, which had been responsible for a chronic ground-water contamination problem, eliminated its discharge.

Of the more than 25 cities that upgraded their municipal wastewater treatment plants in 1982, at least 15 have improved the receiving streams. The streams to which they discharge now are much cleaner than in the recent past.



Jeff Griffin photo

During 1983, the water pollution control program will continue to assist communities by providing state and federal grants where water quality improvements are desirable. Special geographic areas of emphasis will be St. Charles County, Jefferson County, the Columbia area in Boone County, the Branson area in Taney County, and the Lake of the Ozarks area. The program will continue to emphasize innovative and alternative wastewater treatment technologies as well as reuse and recycle concepts whenever possible.

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